



## Long Term Complications of Primary Canine Enucleation

Performed in Sub-Saharan Africa: Two Case Reports

Sheyda Khadembaschi<sup>1</sup>, Christopher Olsen<sup>2</sup>, David Manton<sup>3,4</sup>

1 Dental Department, Princess Margaret Hospital for Children, Australia,

2 Children's Dentistry, Royal Dental Hospital of Melbourne, Australia

3 Paediatric Dentistry, Melbourne Dental School, University of Melbourne, Australia

4 Department of Dentistry, Royal Children's Hospital of Melbourne, Australia

### Introduction

Dental modifications by appointed members of certain societies have been performed for hundreds of years, including modification of the shape of the permanent maxillary incisors or extraction of the permanent maxillary or mandibular incisors<sup>1,2</sup>. These modifications have several characteristics in common: they are performed on a group of people of similar ethnic and cultural background, they are usually for cosmetic reasons, and the modifications are usually made to healthy permanent teeth of young adults<sup>1,2</sup>.

Primary canine enucleation (PCE) is a type of Infant Oral Mutilation (IOM) that differs from dental modification in several aspects: it is performed for a perceived medical benefit, it is performed on infants who are incapable of giving consent, and it can have serious health consequences<sup>1</sup>. PCE which is traditionally known as "Ebinyo", "Ilko Dacowo", "Lugbara" or "Meno ya Nailoni/plastiki" depending on the population and language, is widely practiced in rural areas of eastern and sub-Saharan Africa<sup>1,3,4</sup>. Countries where this practice is most prevalent include Uganda, Sudan, Tanzania, Ethiopia and Kenya<sup>1,5,6</sup>. Traditional healers and other village elders attempt to extirpate the primary canine or other anterior tooth follicles of infants by using often unsterilized, instruments or crude utensils<sup>1,7</sup>. Traditional folklore suggests that the underlying tooth follicles, thought

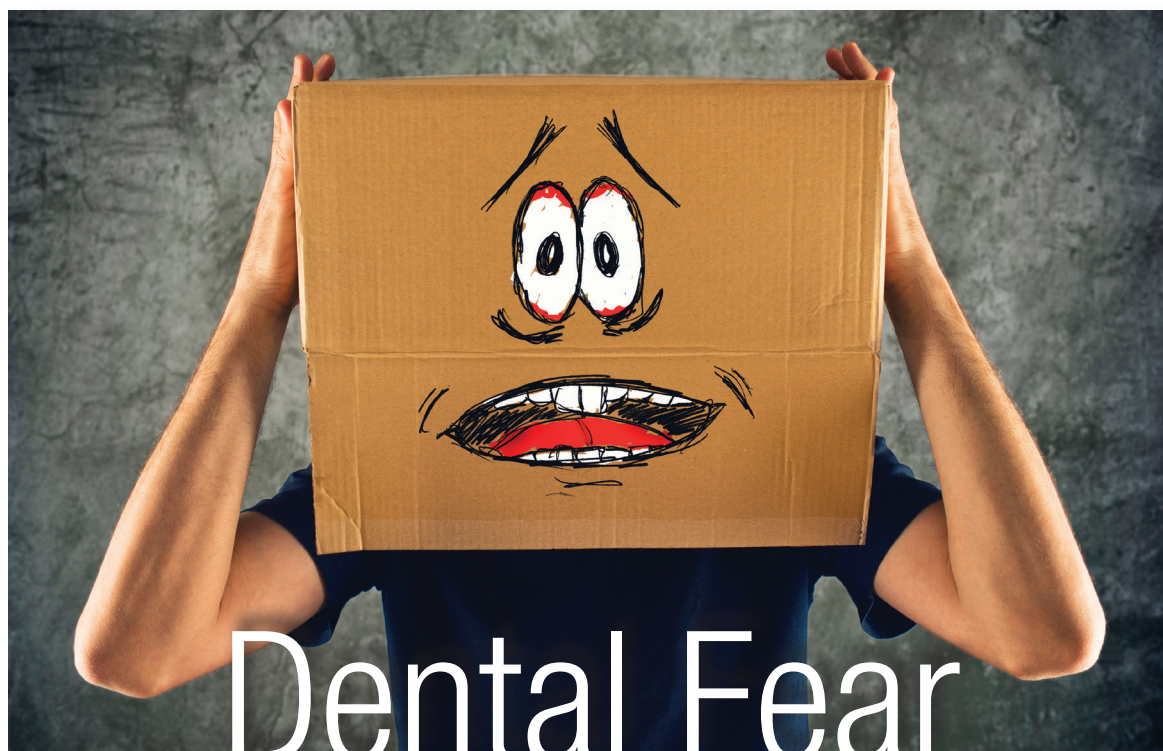
to resemble worms, are the cause of high temperature, vomiting, loss of appetite and diarrhoea in infants<sup>1,3,5,7-9</sup>. In addition to the serious and potentially fatal immediate post-surgical complications, many of those who undergo this practice exhibit characteristic long-term adverse dento-alveolar effects<sup>1,7</sup>.

### Reported techniques

Most reports indicate that the mandibular primary canine tooth follicles are the teeth removed preferentially, however, there are documented geographic and tribal differences and the maxillary canine tooth follicles are also removed<sup>1</sup>. Traditional healers or other village elders such as grandmothers, typically use unsterilised tools to excise the primary canine follicles without local anaesthesia. In addition to knives, the healers' crude tools may include bicycle spokes, metal nails, wires, razor blades, broken glass, scissors or even finger nails<sup>1-3,5,7,8,10</sup>. In some cases a warm poultice of butter, mustard, garlic or herbs are applied or rubbed onto the wound<sup>2,3,8</sup>. Less common forms of IOM include incising over the unerupted primary canine tooth protuberance to elicit bleeding. There are also reports that IOM are combined with uvulectomy, involving the crude amputation of the uvula, is believed to treat vomiting or upper respiratory pathologies<sup>1,2,6,8</sup>. Variations of IOM have been described including removal of the primary mandibular incisor tooth buds within the

## THIS ISSUE

LONG TERM COMPLICATIONS OF PRIMARY CANINE ENUCLEATION	1
FEDERAL PRESIDENT'S REPORT – TIM JOHNSON	8
BRANCH REPORT WA – VANESSA WILLIAM	9
BRANCH REPORT SA – GWENDOLYN HUANG	9
CANDIDA, HAI AND THE NEONATE	12
RIGA-FEDE SYNDROME ASSOCIATED WITH NEONATAL FRENOTOMY: A CASE REPORT	15
VIETNAM VISION PROJECT AUSTRALIA – DENTAL MISSION	17
UP COMING EVENTS	20
CONTACTS	20



# Dental Fear

## WHAT, WHY AND HOW?



### THE WEBINAR

**Assoc Prof Jason Armfield**

Australian Research Centre for Population Oral Health

Colgate Oral Health Network

**6pm AEST Wednesday 10th August 2016**

Topic: Dental Fear

*CPD attendance certificates available*

[www.colgateoralhealthnetwork.com/](http://www.colgateoralhealthnetwork.com/)



### SYNOPSIS IS PROUDLY SPONSORED BY COLGATE

**Colgate Oral Care Consultants** are here to assist you with the products you need in your surgeries

**NSW:** Louise Sargeant 0419 993 700 • Hazel Ashdown 0418 450 713 • Louise McAllister 0408 409 545 • Mandy Sutton 0448 421 699

**QLD:** Narelle Bird 0417 642 665 • Kerry Magnussen 0457 772 997 • Kate Reilly 0409 159 417

**VIC:** Catherine Bensa 0417 598 170 • Natasha Jackson 0458 280 739 • Lucy Piscopo 0429 346 264 • Sabrina Moey 0427 440 232

**SA/NT:** Leanne Nelson 0400 387 249 • **WA:** Kim Savory 0400 505 223 • Kiri Stowell 0408 997 366

**NEW ZEALAND:** Michelle Jelley 021 621 315 • Debra Morrissey 021 593 986

### Colgate Sales Managers

**ACT, NSW, QLD:** Nolene Devery 0419 998 515 | **SA, TAS, VIC, NT, WA:** Anna Bagnell 0417 592 499 | **NZ:** Lisa Fraser 021 593 985

Orders for Colgate products are placed through: Henry Schein Halas | Phone: 1300 658822 | Fax: 1300 658810

## ...CONTINUED FROM PAGE 1

first month of life followed by extraction of the permanent mandibular incisors after their eruption<sup>1</sup>. The extraction of the primary mandibular incisors and then insertion of the tip of a hot knife into the extraction socket to destroy the follicle of the permanent successor has also been reported<sup>1</sup>.

### Cultural beliefs

The direct translation of the terms 'Ebinyo', 'Ilko Dacowo', 'Meno ya Nailoni/plastiki' and are "false teeth", "killer teeth" or "nylon teeth". This describes the developing protuberances on the alveolar process and the underlying tooth follicles<sup>8,10</sup>. They are believed to represent 'false teeth because they are non-mineralized soft-tissue masses occurring in place of the 'real' teeth<sup>1</sup>. In regional areas in which the practice of IOM is endemic, severe diarrhoea is one of the main causes of the high infant mortality rate, so prevention or treatment of these illnesses takes on great significance<sup>1</sup>. The majority of mothers in specific rural areas of Africa believe that removing a child's tooth buds is an effective treatment for severe diarrhoea, persistent fevers, failure to suckle, crying with unknown cause, weight loss, vomiting, itchy gums or general malaise<sup>1,3,6,7,11</sup>.

This belief is reinforced by the fact that parents first notice these developing tooth buds when infants are being weaned from breast-feeding, a period during which infants are most likely to have their first episodes of enteritis<sup>1</sup>. In addition, dehydration caused by diarrhoea may desiccate the oral mucosa, potentially making the alveolar protuberance associated with the developing canine tooth follicles appear even more prominent. Paradoxically, the fact that many children become seriously ill and even die after undergoing this procedure unfortunately may reinforce further how "dangerous" these tooth buds are<sup>1</sup>. This practice is believed to be of relatively recent onset and may be an adaptation by traditional village healers of a procedure practiced by colonial dentists in the early 1900s in which they incised the alveolar mucosa over erupting teeth to decrease the pain associated with tooth eruption and eruption cysts<sup>1</sup>. PCE is believed to have originated in northern Uganda, although the practice has spread to neighbouring countries during the last 40 to 50 years<sup>1,12</sup>.

### The role of traditional healers

In many developing African countries

there is a lack of belief in western medical practices and inadequate access to trained dentists<sup>1</sup>. As a result, many parents receive their counselling on dental and medical care from tribal elders or traditional healers<sup>1</sup>. Traditional healers tend to share the same culture, beliefs and values of their patients and are generally esteemed members of the population<sup>2,3</sup>. In a study in Durban, South Africa, 70% of patients reported they would consult a traditional healer as a first choice and 89% of the participants in the study 'felt healed' after consulting a traditional healer, even though the majority of the conditions that they sought help for were life threatening<sup>13</sup>. Despite the popularity of traditional healing it remains poorly regulated<sup>13</sup>. Traditional healers are skilled in counselling and can also serve as a priest but have little or no training in oral diagnosis and anatomy when compared with conventional dental practitioners<sup>2,13</sup>. It has been reported that tooth extractions constitute 38% of the surgical procedures carried out by traditional healers and the most documented reason for extractions in Africa are ritual tooth extractions and PCE<sup>2</sup>. It is obvious that traditional healing is an important component of health care in Africa and oral health care professionals need to improve communication with traditional healers to promote better quality primary health care<sup>2,6,10,13,14</sup>.

### Prevalence

The prevalence of PCE depends on the population studied, access to modern medical facilities, socio-economic and education level of the families<sup>1,9</sup>. In one study involving 398 Sudanese children aged 4 to 8 years, those in the lowest socioeconomic group were three times more likely to have undergone IOM than those in the highest socioeconomic group. In another cross-sectional study at a hospital in northern Uganda, 30 percent of children aged 0 to 4 years had undergone IOM<sup>1,6</sup>. Other studies have shown prevalence ranging from 15 to 80 percent or more, depending on geographic location<sup>1,6</sup>. This practice and, or the long-term dento-alveolar effects of the practice have been reported in non-African countries such as the Maldives, United States, New Zealand, England, France, Norway and Sweden especially in migrant populations<sup>1,8,11,15-19</sup>.

### Reported Outcomes

The adverse effects from PCE can be divided into short-term complications occurring soon after the procedure and

long-term dental and psychological side effects. In the period immediately after the procedure, the most common risks include excessive bleeding, infection including sepsis, osteomyelitis, noma, tetanus, meningitis and aspiration pneumonia<sup>1,3</sup>. Other complications include the transmission of infectious diseases (including HIV and hepatitis) through the poor hygiene and infection control practices and even death due to complications<sup>1-3,6,10</sup>. The significant morbidity and mortality associated with these practices is well documented and likely is made worse by the fact that healers perform the procedure on infants who are usually already acutely ill from severe diarrhoeal illness<sup>1,6</sup>. In a study conducted in hospital in Northern Uganda, researchers found that approximately two percent of all paediatric admissions between 1992 and 1998 were related to complications arising from IOM, representing the 10th leading cause of admission<sup>1,6,10</sup>. More than 20 percent of these patients died and the average age of the admitted patients was five months<sup>1,5,6,10</sup>.

Assessing the psychological effects of the practice of IOM can be difficult but long-term physical adverse effects include reduced growth during the first year of life and dento-alveolar sequelae are more easily assessed<sup>1,4,5</sup>. Deleterious effects on the permanent mandibular canine teeth have been reported ranging from peg- or shovel-shaped malformations of the crown to partially split teeth and severe crown malformations (*Table 1, next page*)<sup>1,4,8</sup>. Malocclusions due to mid-line shifts, transposition of the lateral incisor and canine teeth, ectopic eruption of permanent lateral incisors, early eruption of the permanent canine teeth, the presence of unerupted, impacted, missing permanent canine teeth and the development of odontoma-like tooth structures have also been documented<sup>1,8,9</sup>. Although rare, odontoma formation is not unexpected, as trauma to tooth follicles have been associated with the development of odontoma-like structures<sup>20</sup>.

### CASE 1

A healthy nine year old boy (GP) without any presenting complaints was referred to the Royal Dental Hospital of Melbourne, Children's Dentistry Department for treatment of an odontome in the 33 region. Consent was obtained to use the clinical photographs for publications.



Table 1

Dental Anomaly	Number of affected subjects (n)	Estimated population prevalence (%)
Enamel defect of primary canine	35	35.4a
One or more absent primary canines	20	20.2a
Retention of lower primary lateral incisors and distal eruption of permanent lateral incisors	12	12.1a
Enamel defect of permanent canine (inconsistent with any other defect)	16	9.9b
Enamel defect of lower permanent lateral incisor (inconsistent with any other defect)	9	5.6b
Absent lower permanent lateral incisor	8	5.0b
Non-vital lower permanent lateral incisor	2	1.2b
Enamel defect of lower permanent lateral incisor (inconsistent with any other defect)	1	0.6b

a Subjects aged 3-9 years (n=99) b Subjects aged 9-17.1 years (n=161)

He was born in a refugee camp in Uganda and the family migrated to Australia when the patient was four years of age. At the approximate age of two years GP was taken to a traditional healer with the complaint of “painful swollen lumps” on the gums, which is consistent with the age for eruption of the primary canines. The traditional healer extracted two upper and a lower tooth with a blade. The parents noticed no post-operative complications and the procedure seemed to relieve the patients’ initial symptoms.

### Clinical Examination

The findings of the extra-oral examination seen in *figures 1 & 2* were a divergent facial profile with a flat mid-face, convex e-line, competent lips. Intra-orally there was generalised plaque-associated gingivitis with poor oral hygiene (*figures 3, 4 & 5*) but no evidence of increased pocket depths. GP has a Class III molar, right canine and incisor relationships with anterior cross-bite. There was no crowding in the maxillary arch (*figure 6*), but the mandibular arch had retained 81 & 72, and unerupted 32 & 33 (*figure 4*). Hard tissue examination revealed pit and fissure carious lesions in the 16, 26, 36, 46 (*figure 6*) and hypomineralisation and demineralisation of the enamel of retained 81 & 72. There

was also hypomineralised enamel on the 23 & 43 (*figure 4*).

### Radiographic Examination

On the OPG (*figure 7*) it appears that the crown of the 73 was forced down during attempted PCE and traumatised the developing 32 and disrupted the eruption path of the 33. The fully formed 33 and the 73/32 odontome can be seen on the CBCT (*figures 10 & 11*). The bitewings indicated non-cavitated carious lesions on the distal of the 14 & 24. The results of the cephalometric analysis (*figure 8*) included a dolichofacial growth pattern with a retrusive maxilla and normal mandible. The upper incisors were proclined and the lower incisors were normally positioned. The bitewing showed enamel demineralisation on the distal of the 14 and 24 (*figure 9*).

### Differential Diagnosis

Differential diagnoses for the 32/33 area includes congenitally missing 32 and 33 and failure of eruption of 73 with compound odontoma or complex odontoma or mixed odontoma or an ossifying fibroma in the 32/33 region. Differential diagnoses for the retained primary incisors and 23 & 43 include Vitamin D deficiency hypoplasia of enamel or trauma induced hypoplasia.

### Definitive Diagnosis and Treatment Plan

The preventive phase included oral hygiene and diet counselling and remineralisation therapy of the 14 & 24. Restorative phase included preventive resin restorations on the 16, 26, 36, 46 and fissure sealants on the remaining posterior teeth when fully erupted. The orthodontic and surgical treatment plan included removal of the retained primary teeth, 33 and the odontome (*figures 12, 13 & 14*) and then closure of space in the short term. After completion of growth, occlusion and aesthetics are to reassessed. Currently (*figure 15*) the preventive, restorative and surgical phases have been completed with histological confirmation of odontome of the surgical extracted hard tissue pathology. Orthodontic treatment is now ready to be commenced. Combining the history of IOM, the radiographic and the histologic findings, the definitive diagnosis for the 32/33 area is: Odontome formation caused by the trauma to the 73 crown impinging on the tooth bud of the 32 during IOM at the age of two years. The path of the 33 was disrupted during the odontome formation resulting in horizontal impaction.

Figures 1-2



Figures 3-5



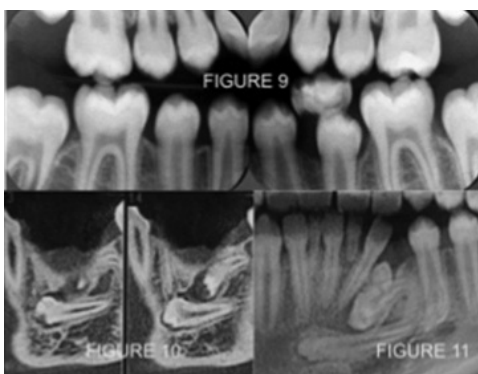
Figure 6



Figures 7-8



Figures 9-11



Figures 12-13



Figure 14



Figure 15





## CASE 2

A healthy three and a half year old boy (NG) was referred to the Royal Dental Hospital of Melbourne Children's Dentistry Department for treatment of severe early childhood caries and pain. Consent was obtained to use the clinical photographs for publications. NG was born in Ethiopia and the family migrated to Australia when the patient was two years of age. At approximately one year of age, NG was taken to a traditional healer with the complaint of fevers. The traditional healer extracted his 'fever teeth' with a sharp tool with no form of local anaesthetic or sedation. On presentation, NG's family were concerned about the holes in his teeth because he was under weight, which had also led to prolonged and milk bottle use.

## Clinical Examination

The findings of the extra-oral examination were a straight facial profile and competent lips. Intra-orally, there was generalised plaque-associated gingivitis with poor oral hygiene and severe early childhood caries (figures 16 & 17). A hard lesion was palpable in vestibule of the 63 area. NG has mesial step primary molar occlusion and the 53, 63, 73, 83 appeared to be missing. The hard tissue examination revealed multi-surface cavitated carious lesions in the 55, 54, 52, 52, 61, 62, 64, 75, 74, 85 as well as carious lesions in the occlusal-palatal grooves of the 65 and the occlusal-distal surface of the 84 without distal marginal breakdown.

## Radiographic Examination

On the OPG (figure 18), the 63 appears unerupted with no root formation and the 53, 73 & 83 were missing. The maxillary occlusal film (figure 20) confirms the OPG findings regarding 63 and caries in the maxillary anterior teeth found in the clinical exam. The bitewings confirm carious lesions in the primary molars and that there are no radiographic signs to indicate pulpal pathology (figure 19).

## Differential Diagnoses

Differential Diagnoses includes congenitally missing 53, 73 & 83 and regional odontodysplasia in the 63 area or primary failure of eruption of 63 or trauma a traumatic intrusive luxation injury to the 63.

## Definitive Diagnosis and Treatment Plan

Combining the history of IOM, the radiographic and the clinical findings of missing 53, 73, 83, the definitive diagnosis

for the 63 area is: Ectopic position and arrested root development caused by the trauma to the 63 during PCE. The preventive phase included oral hygiene and diet counselling. Restorative phase (figure 22) included composite strip crowns on the 51, 61, composite restoration and sealant of the 65, 84, stainless steel crowns on teeth 55, 54, 64, 75, 74, 84 cemented with glass ionomer cement, including MTA pulpotomy of the 75 and extraction of the 52 and 62. The surgical management included removal of 63, which was elevated through a 10mm vertical incision (figure 21), without the need for raising a flap or removing bone. The restorative and surgical phases were completed under general anaesthesia. Currently the preventive, restorative and surgical phases have been completed and have been followed up with regular reviews to monitor caries risk and occlusion. The most recent review, which was completed 16 months post-operatively revealed no complaints, an improved weight diet and oral hygiene, healthy oral tissues and clinically sound restorations. This is illustrated in the figures below (figures 23 & 24).

## Conclusion

Although the practice of PCE is well-recognized by health care providers in Africa, knowledge about this practice is not widespread among dental professionals<sup>1</sup>. Although the practice of PCE is believed to be exceedingly rare outside of Africa, it is important that dentists and allied dental personnel who treat immigrants from countries in which IOM is endemic be aware of the social factors behind this practice as well as be able to recognize its dental and psychological consequences<sup>1</sup>, 4, 6. In many cases, dental practitioners treating children and adolescents from Sub-Saharan Africa with missing or malformed primary and permanent anterior teeth should investigate a history of attempted extraction or enucleation of primary teeth or tooth follicles<sup>1</sup>.

At the time of the treatment of the case, Dr Khadembaschi was a DCD postgraduate student at the Melbourne Dental School.

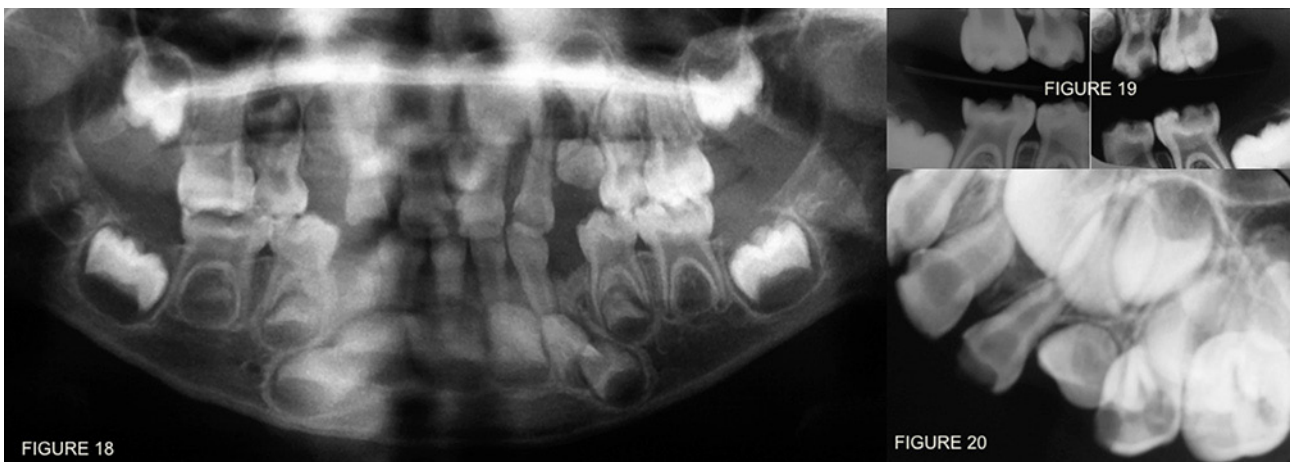
## References

1. Edwards PC, Levering N, Wetzel E, Saini T. Extirpation of the primary canine tooth follicles: a form of infant oral mutilation. *J Am Dent Assoc.* 2008;139(4):442-50.
2. Agbor AM, Naidoo S, Mbila AM. The role of traditional healers in tooth extractions in Lekie Division, Cameroon. *J Ethnobiol Ethnomed.* 2011;7(15):1-8.
3. Kikwilu EN, Hiza JF. Tooth bud extraction and rubbing of herbs by traditional healers in Tanzania: prevalence, and sociological and environmental factors influencing the practices. *Int J Paediatr Dent.* 1997;7(1):19-24.
4. Rodd HD, Davidson LE. 'Ilko dacowo': canine enucleation and dental sequelae in Somali children. *Int J Paediatr Dent.* 2000;10(4):290-7.
5. Longhurst. IOM Awareness. *British dental journal.* 2010;208(5):216.
6. Johnston NL, Riordan PJ. Tooth follicle extirpation and uvulectomy. *Aust Dent J.* 2005;50(4):267-72.
7. Triance. Campaign Aims to Create Awareness of Infant Oral Mutilation. *Br Dent J.* 2008;205(11):588.
8. Holan G, Mamber E. Extraction of primary canine tooth buds: prevalence and associated dental abnormalities in a group of Ethiopian Jewish children. *Int J Paediatr Dent.* 1994;4(1):25-30.
9. Batarigaya A, Ferguson M, Laloo R. The impact of ebinyo, a form of dental mutilation, on the malocclusion status in Uganda. *Community Dent Health.* 2005;22(3):146-50.
10. Iriso R, Accorsi S, Akena S, Amone J, Fabiani M, Ferrarese N, et al. 'Killer' canines: the morbidity and mortality of ebino in northern Uganda. *Trop Med Int Health.* 2000;5(10):706-10.
11. Noman AW, F. Pawar, R. Canine Gouging: A Taboo Resurfacing in Migrant Populations. *Case Rep Dent.* 2015;2015(2015):1-5.
12. Pindborg J. Dental Mutilations and Associated Abnormalities in Uganda. *Am J Phys Anthropol.* 1969;31(3):383-9.
13. Puckree T, Mkhize M, Mgobhozi Z, Lin J. African traditional healers: what health care professionals need to know. *Int J Rehabil Res.* 2002;25(4):247-51.
14. Ndiwane A. Laying down the knife may decrease risk of HIV transmission: cultural practices in Cameroon with implications for public health and policy. *J Cult Divers.* 2008;15(2):76-80.
15. de Beavis FF, A. Fuge, K. Whyman, R. Infant Oral Mutilation: A New Zealand Case Series. *N Z Dent J.* 2011;107(2):57-9.
16. Amailuk P, Grubor D. Erupted compound odontoma: case report of a 15-year-old Sudanese boy with a history of traditional dental mutilation. *Br Dent J.* 2008;204(1):11-4.
17. Erlandsson AL, Backman B. A case of dental mutilation. *ASDC J Dent Child.* 1999;66(4):278-9, 29.
18. Fitton JS. A tooth ablation custom occurring in the Maldives. *Br Dent J.* 1993;175(8):299-300.
19. Khonsari RH, Corre P, Perrin JP, Piot B. Orthodontic consequences of ritual dental mutilations in northern Tchad. *J Oral Maxillofac Surg.* 2009;67(4):902-5.
20. Levy BA. Effects of experimental trauma on developing first molar teeth in rats. *J Dent Res.* 1968;47(2):323-7.

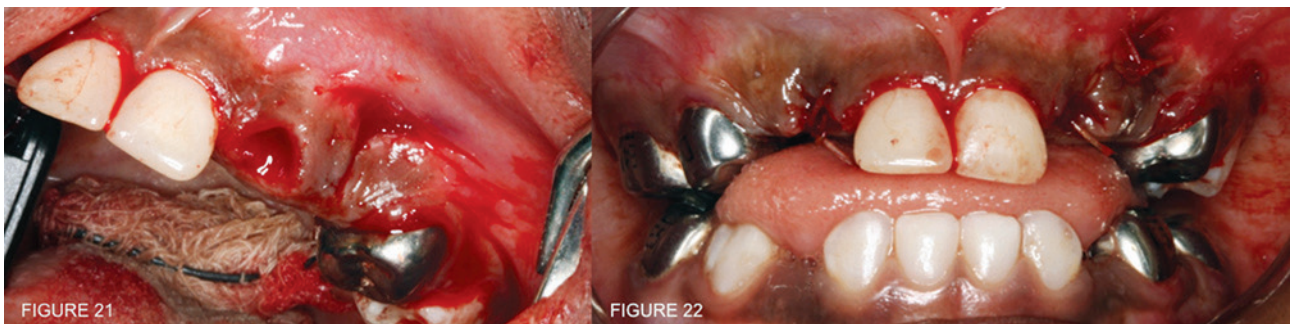
Figures 16-17



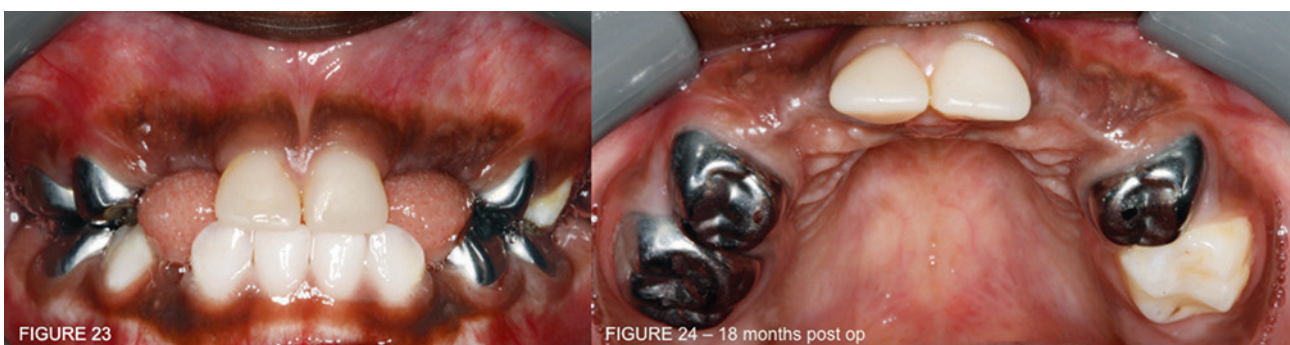
Figures 18-20



Figures 21-22



Figures 23-24







## Federal President's Report

Tim Johnston

**Its amazing that we are staring the middle of the year in the face already...**

By now we all should be familiar with the new ADA Australian Schedule of Dental Services and Glossary which contained a few changes and new item numbers that affect our daily Practice. Some like me, may have some concerns with a few of the changes and as a Society we may need to be a little more proactive when the Twelfth edition is being put together. The Scheduling Committee has recently proved that it will listen to special interest groups and make amendments. Presently I am preparing a communication to the new Chair regarding past decisions and previous level of consultation with special interest societies and specialist academics, including ANZSPD. Certainly if any

members have concerns or points they want raised please contact me.

I recently returned from the American Academy of Paediatric Dentistry meeting in San Antonio, Texas. It was again a big meeting with the opportunity to catch up with old friends and meet new. Again it was very comforting to sit at an international meeting and see that my Australian and New Zealand Colleagues can hold their heads high with their level of paediatric dental care, maybe higher. An ANZSPD member I spoke with last wee who attended the recent EAPD meeting felt similar. Adopted Aussie/Kiwi's are also doing well, Vidal Perez, the

winner of the 2015 Colgate Postgraduate award has had his paper accepted to present at the British Society of Paediatric Dentistry in September this year. We wish Vidal all the best.

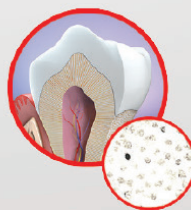
The rest of the year holds promise for catching up with each other at various meetings around New Zealand, Australia and internationally. Our New Zealand Colleagues are well advanced in the organisation of the next RK Hall meeting to be held at the end of March 2017. This will be a great meeting at a great location and I urge all members to consider the trip within NZ or across the ditch to attend.

Stay safe and well this winter.

## THERE'S A BETTER WAY TO RELIEVE TOOTH SENSITIVITY\*

### REPAIR

Forms a calcium-rich layer and helps repair† sensitive areas of teeth for instant relief‡, 1,2



### PREVENT

Regular use helps strengthen gums and provides lasting protection to prevent tooth sensitivity†



**Colgate®**

YOUR PARTNER IN ORAL HEALTH

† With continued twice daily brushing. For instant relief apply product directly to each sensitive tooth with fingertip and gently massage for one minute. For lasting results, brush twice daily. ‡ vs. toothpastes with 2% potassium ion. 1. Nathoo S et al J Clin Dent 2009; 20 (Spec Iss):123-130. 2. Ayad F et al. J Clin Dent. 2009; 20 (Spec Iss): 10-16. Always read the label. Follow the instructions.



## Branch Report

### Western Australia

The ANZSPD Branch in Western Australia has had a great start to the year. The annual University of Western Australia Prize Giving Ceremony was held on Thursday 10th March. We are proud to announce that both undergraduate and postgraduate federal ANZSPD Louise Brearley Messer Essay competitions were won by West Australian students, Ms Lisa Otway and Dr Chaturi Neboda. In addition, the Colgate IADR Travel Scholarship was jointly awarded to two Western Australians, Dr Susan Wong, a senior Paediatric Dental Registrar, and Dr Chaturi Neboda, a second year postgraduate Paediatric Dental Student. We believe this a reflection of the hard work and dedication of our West Australian students, who are flourishing under the guidance and tutorage of Associated Professor Robert Anthonappa.

We took the opportunity to congratulate both Dr Chaturi Neboda and Ms Lisa Otway at our Partner's evening function, held on the 11 March.

Our mid-winter meeting at Pullman Bunker Bay resort is set to be held on 24th and 25th June. Our speakers include Professor Camile Farah (Head of School, Professor of Oral Oncology) discussing over two lectures, "Paediatric Oral Medicine", and "Paediatric Oral and Maxillofacial Pathology"; Dr Emma Lewis (Oral and Maxillofacial Surgeon) discussing "The Wisdom about Wisdom Teeth", and "Developments in Orthognathic Surgery"; and Dr Justin Wong (Paediatric Dentist) discussing "Infraoccluded primary molars....that sinking feeling." These lectures will be interspersed with a number of "pot-pourri" lectures throughout the day. The weekend is always enjoyable, and set in the beautiful surrounds of Dunsborough, 3 hours South of Perth.

We would like to invite all ANZSPD members to our WA Branch Scientific Day, "The Other Side of the Mirror: Reflecting on Diverse Paediatric Issues" (Please see advertisement). This will be held on Friday 5th August where we have an exciting line-up of speakers and topics including International Guest, Professor Helen Rodd. Topics will include cognitive behavioural management, managing children with Autism and Sensory Processing Disorder, managing temporomandibular disorders in the anxious adolescent patient, childhood obesity, emergency management of the child in pain, intravenous sedation, and concluding with a panel discussion to discuss medico-legal issues and risks in paediatric dentistry. Should you like to join us for this fantastic day, please register online: [anzspdwaugust.eventbrite.com.au](http://anzspdwaugust.eventbrite.com.au)

Following our Scientific day, the WA Branch arranges a postgraduate research evening to be held on Thursday 15th September followed by our AGM to be held at Linton and Kay Art Gallery on Friday 4th November. We are looking forward to an informative and enjoyable second half of the year.

**Dr Vanessa William**



## Branch Report

### South Australia

2016 has so far progressed with unexpected speed! Our first meeting of the year, in conjunction with the Australian Prosthodontic Society SA Branch, was very well attended and enjoyed. There are plans for future meetings with other societies. Professor Ray Russo presented at our second meeting, providing us insight to the multi-disciplinary involvement of the Paediatric Rehabilitation team at the Women's and Children's Hospital. We were honoured with a sneak peak of Australia's first 'Centre for Robotics and Innovation', established at the Women's and Children's Hospital, Adelaide.

To cap off the latter half of the year, we have a dinner meeting on "Interceptive Orthodontics: a Paediatric Dentist's and Orthodontist's Perspective" and for our final meeting of the year, Emeritus Professor Alastair Goss will be discussing "Litigation and Expert Witness cases related to Paediatric Dentistry". A big thanks to the SA branch committee for their involvement and support.

**Gwendolyn Huang**

Colgate

For Professional Dental Use Only

**Duraphat® 22,600 ppmF**

5% w/v Sodium Fluoride Varnish



10mL

For caries prevention and treatment of hypersensitive teeth.  
1mL contains 50mg sodium fluoride equivalent to 22.6 mg of Fluoride.  
Contains Alcohol and Saccharin.

Directions for use: See enclosed leaflet.  
Store below 25°C.  
Use within 3 months of opening.  
Keep all medicines out of reach of children.  
Do Not Swallow

*Caries prevention  
varnish in a socially  
deprived community*

Zimmer S, Robbe H, Ruster J, Ruster J, Ruster J, Ruster J  
Caries prevention with fluoride varnish in a socially deprived community. Community Dent Oral Epidemiol 1999; 27: 103-8.

Abstract - It has been suggested that professional fluoride varnish should be applied to the teeth of children with high caries risk. One possible reason for this recommendation is that fluoride varnish is effective in the prevention of caries. The aim of this study was to evaluate the effectiveness of such a program in a socially deprived community. The study was conducted in a socially deprived community in the north of England. The study was a randomised controlled trial. The study was conducted in a socially deprived community in the north of England. The study was a randomised controlled trial. The study was conducted in a socially deprived community in the north of England. The study was a randomised controlled trial.

# IT'S CLINICAL EVIDENCE THAT SETS OUR VARNISH APART<sup>1-3</sup>

**Duraphat®. Proven Caries Protection<sup>1-3</sup>**

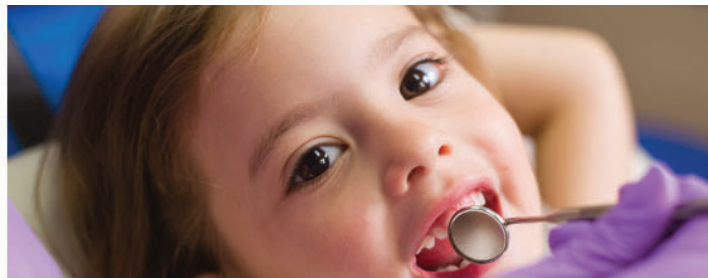
Colgate®

YOUR PARTNER IN ORAL HEALTH

[www.colgateprofessional.com.au](http://www.colgateprofessional.com.au)

E.g. 1. Marinho VCC et al.: Fluoride Varnishes for preventing dental caries in children and adolescents (review). Cochrane Database Sys Rev. 2002;3: CD002279. 2. Weintraub et al.: Fluoride varnish efficacy in preventing early childhood caries. J Dent Res 85(2), 172-176, 2006. 3. Zimmer et al.: Caries prevention with Fluoride varnish in a socially deprived community. Community Dent Oral Epidemiol 1999; 27: 103-8.





## The Other Side of the Mirror: Reflecting on Diverse Paediatric Issues

**Friday 5th August 2016**

**8.00am - 5.30pm**

*(Registration from 7.40am)*

**The University Club of Western Australia**

### **International Guest Lecturer: Professor Helen Rodd**

Impact of Dental Caries on Children and Young People

Cognitive Behavioural Therapy for Dentally Anxious Children.... *It really works!*

#### **Sensory Processing Disorder and Autism - Past the sensitivity to support patient care**

Ms Jean Loth (Occupational Therapist)

#### **Temporomandibular Disorders in the Anxious Adolescent**

Dr Ramesh Balasubramaniam (Oral Medicine Specialist)

#### **Childhood Obesity and Oral Health - Epidemiology, evidence and pathways**

Professor Linda Slack-Smith (Coordinator of Research, OHCWA)

#### **Loving Them To Death: Childhood Obesity**

Dr Jacqueline Curran (Paediatric Endocrinologist)

#### **Why Are We Getting Fatter?**

Dr Barbara Keating (Dietitian)

#### **A Perverse Economic Driver**

Dr John Winters (Chairman, Dental Dept PMH)

#### **Emergency Management of the Child in Pain**

Dr Rebecca Williams (Paediatric Dentist)

#### **Just Lie Still! Intravenous Sedation: Risks involved in paediatric dentistry**

Dr Priya Thalaysingam (Paediatric Anaesthetist)

#### **Panel Discussion**

#### **Current Dento-legal Issues and Risks in Paediatric Dentistry - Navigating the minefield.**

Mr Enore Panetta (Director, Panetta McGrath Lawyers)

Professor Helen Rodd (Professor at the University of Sheffield, UK)

Dr John Winters (Chairman, Dental Dept, PMH)

Dr Priya Thalaysingam (Paediatric Anaesthetist)

#### **Registration:**

#### **Scientific Program 7.5 hours CPD**

Members of ANZSPD

\$340

1st year Graduates and Postgraduate Students

\$340

Dental Therapists/ Oral Health Therapists/ Hygienists/Auxillaries (non ANZSPD member)

\$370

Dentists (non ANZSPD member)

\$450

**Dinner with partners:** The University Club of Western Australia

\$125pp

**Become an ANZSPD Member: Log on to [www.anzspd.org.au](http://www.anzspd.org.au) (Assoc Membership \$70; Full Membership: \$110)**

**Register Online: [anzspdwaugust.eventbrite.com.au](http://anzspdwaugust.eventbrite.com.au)**

*Please forward questions to Dr Vanessa William (ANZSPD WA Branch President): [wa.president@anzspd.org.au](mailto:wa.president@anzspd.org.au)*

*Proudly sponsored By*



# Candida, HAI and the Neonate

Andrea Kazoullis,

BSc, MPhil, GCertHE

PhD Candidate, School of Dentistry, University of Queensland

In the mid-19th century, Ignaz Semmelweis a Hungarian physician, provided evidence that health care workers carried childbed fever (puerperal fever) from person to person on their unclean hands<sup>1,2</sup>. Although this finding did not immediately improve the sanitary conditions in hospitals, over the last century in response to the high incidence of infectious diseases in paediatric wards, several infection control measures have been implemented and tested in paediatric-care settings before being applied to the adult environment<sup>1</sup>. The infection control measures were to prevent hospital-acquired or health-care associated infections (HAIs) previously termed nosocomial infections, in certain high risk patients<sup>3</sup>. In particular, HAIs are one of the leading causes of mortality and morbidity in the neonatal (newborn) intensive care unit (NICU)<sup>3</sup> and paediatric intensive care unit (PICU)<sup>1</sup> (see *Figure 1*). The immunological naivety of young children particularly neonates, the greater permeability of their mucosal barriers and the aggressive care required within these units, translates into heightened susceptibility to many infections with significant health consequences in both the severity and duration of microorganism shedding<sup>1,4</sup>.

In 2011, preterm births (less than 37 completed weeks of gestation) occurred for 8.3% of all mothers in Australia<sup>5</sup>. Of these, 6.3% of live births were of low birthweight (LBW <2500g), 1.0% of live births were of very low birthweight (VLBW < 1500g) and 0.5% of live births were of extremely low birth weight (ELBW <1000g)<sup>5</sup>. New technologies in temperature regulation, precision delivery infusion pumps for fluid and medication administration, continued improvement in ventilator support and refined nutritional management has improved the survival of the VLBW and ELBW infants<sup>6</sup>. Amongst the consequences of increased survival of these infants is an increase in the cumulative incidence and importance of neonatal Candida infections<sup>7</sup> including disseminated candidiasis, candidaemia and mucocutaneous candidiasis<sup>8-11</sup>.

The yeast *Candida* is a common coloniser in healthy individuals of skin and mucous membranes (*Figure 2a, 2b*). The genus

contains >150 species with only a few being considered as opportunistic fungal pathogens able to cause candidiasis in the human host<sup>12</sup>. Candidiasis includes a broad spectrum of infections, ranging from superficial mucosal infections to life-threatening invasive disease into virtually any major organ<sup>12</sup>. *Candida albicans* is a ubiquitous fungal organism that commonly colonises skin and mucosal surfaces in healthy individuals. However, impairment of the host defences results in the organism becoming a pathogen<sup>13</sup>.

*Candida* species including *C. albicans*, are best known as late-onset neonatal pathogens i.e. colonisation that may serve as a source for systemic disease may have been established at birth following contact with inhabited maternal mucosal surfaces<sup>10,14</sup>. Longitudinal studies of NICU infants observed that many neonates became colonised with *Candida* several weeks after delivery and likely both HAI and parental sources<sup>10</sup>.

There is a parallel relationship with the incidence of candidiasis and the implementation of modern medical procedures that adversely affect the immune system<sup>12</sup>. In premature infants, *Candida* species (in particular *C. albicans*) are the third most common pathogen for HAI blood stream infections and are associated with the second highest mortality rate<sup>7</sup>. Prospective studies from countries in Europe and the United States estimated attributable mortality (quantifying the contribution of risk factors to the burden of disease – WHO Metrics)<sup>15</sup> from bloodstream infections of 3% in paediatric patients but was 11% amongst neonates with VLBW. When crude mortality was measured (mortality rate among all age groups and due to all causes – WHO Definitions: emergencies)<sup>16</sup> there was an increase to 18% of infected cases. Crude mortality increased further in neonates infected with fungi (32%)<sup>1</sup>. Candidaemia resulted in prolonged hospital stay for children aged 5 years and under – as much as 25 days longer. Multiple studies with ELBW infants with systemic *Candida* infections, resulted in higher rates of chronic lung disease, periventricular leukomalacia, severe retinopathy of prematurity and adverse neurological outcomes than uninfected

controls measured at two years of age<sup>1,7</sup>. A separate prospective study done in Thessalonikis Greece from 1994 to 2000 found that 65.5% (38/58) of cases of neonatal candidiasis was caused by *C. albicans* and mortality associated with *C. albicans* was 39.5%<sup>7,17</sup>.

As in the adult setting, the emergence and dissemination of antimicrobial-resistant organisms is a vital concern in paediatrics and is closely linked to the use of antimicrobial agents<sup>1</sup>. In 2005, the Paediatric Preventive Network in the United States surveyed 2647 paediatric patients in 31 hospitals and published findings that first- and third-generation cephalosporins and vancomycin were the most frequently prescribed antibiotics in PICUs with another antibiotic used as a perioperative prophylaxis<sup>1</sup>. In 2000 a Cochrane meta-analysis including five clinical trials studying the use of prophylactic vancomycin (in low doses reduces the incidence of nosocomial sepsis) for the prevention of central venous catheter (CVC)-related HAI in VLBW infants, concluded that routine prophylaxis with vancomycin should not be undertaken<sup>3</sup>.

In the NICUs, the most commonly used antimicrobials were gentamicin, ampicillin and vancomycin<sup>1</sup>. The prolonged empirical, broad-spectrum antibiotic therapy selects for resistant bacteria, decreases the number of commensal bacteria<sup>14</sup> and increases the risk of invasive *Candida* infections<sup>1,3,7</sup>. Infants in both the PICU and NICU with compromised mucosal integrity and/or naïve host immunity increase the colonisation density of *Candida* species and the incidence of disseminated candidiasis<sup>14</sup>. The practice of oral anti-fungal prophylaxis in VLBW infants has been evaluated in a Cochrane review in 2004 in which three eligible trials (nystatin, miconazole and fluconazole) were considered. The authors found insufficient evidence to support the use of prophylactic oral anti-fungal agent in VLBW infants<sup>3</sup>.

As smaller and sicker infants survive with the aid of invasive therapies and potent pharmacologic agents, *Candida* and other opportunistic pathogens are



Figure 1: Site distribution of health care associated infections (HAIs) in paediatric intensive care units (PICU) by age group

\* Refers to gastrointestinal infection, skin or soft tissue infection, cardiovascular infection (Adapted by Posbay-Barbe 2008)<sup>1</sup>.

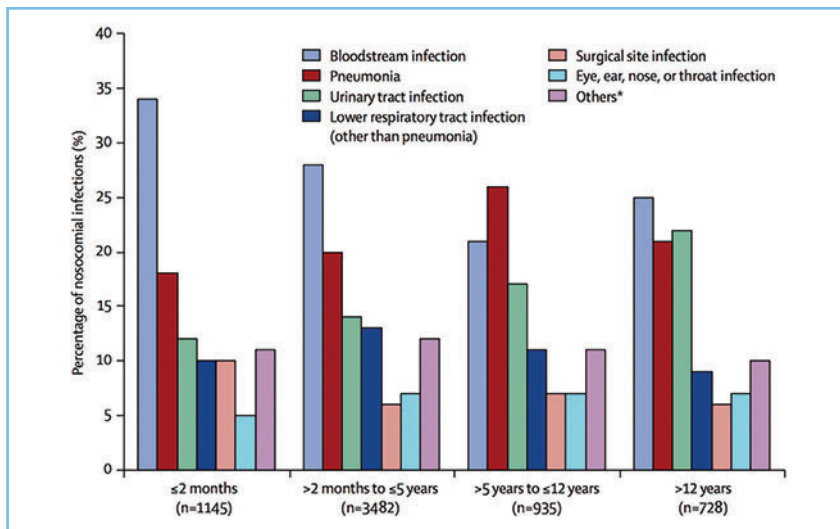


Figure 2a: *Candida* sp. begin as yeast cells. If allowed to germinate will produce pseudo-hyphae and then true hyphae

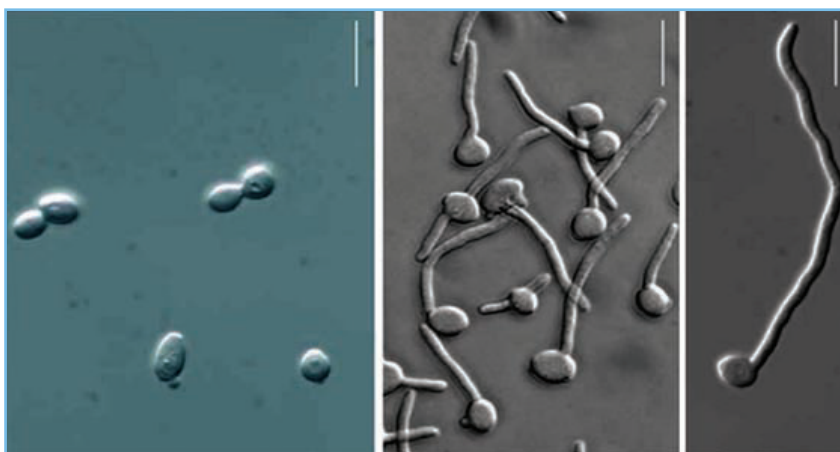
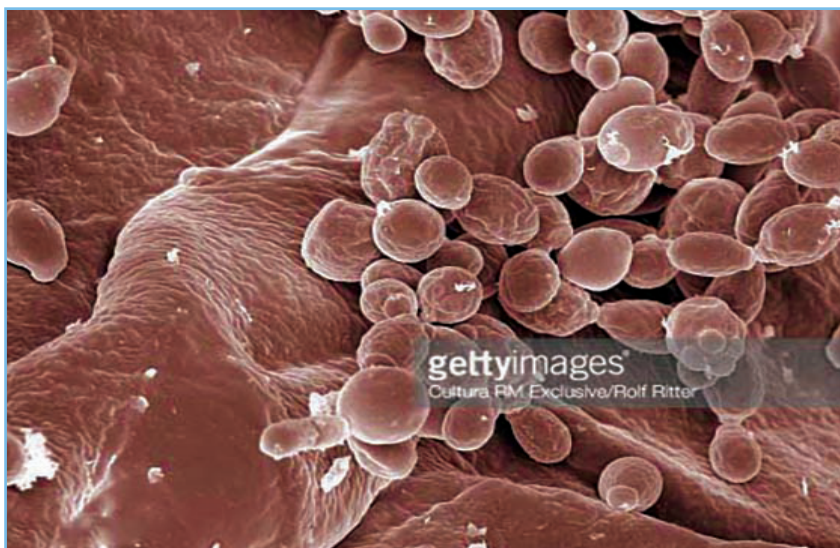


Figure 2b: A scanning electron micrograph (SEM) of *Candida albicans* on epithelial cells of mucous membrane (vagina). Magnification 4000x. Cultura RM Exclusive/Rolf Ritter



likely to assume increasing prominence as causes of morbidity and mortality<sup>10</sup>. Although candidaemia is a leading cause of infectious mortality in particular with ELBW infants, this represents only a fraction of neonatal candidiasis. A conceptual model done by Benjamin *et al*<sup>11</sup> from Duke University highlights the pivotal role of central catheters (an intravascular foreign body and predictable host response to this) and the underestimation of the cumulative incidence of disease (see Figure 3).

A subsequent prospective multi-centre study from the same authors (see Figure 4) looked at neonatal candidiasis among ELBW infants and evaluated risk factors for the development of neonatal candidiasis, responses to anti-fungal therapy and the association between candidiasis and subsequent morbidity and death<sup>18</sup>. Neurodevelopmental (ND) outcomes at 18 months to 22 months was also presented. The authors concluded that blood cultures were negative for approximately half of the infants with *Candida* meningitis, 10% of neonates had persistent candidaemia for > 2 weeks despite anti-fungal therapy and was commonly associated with a delay in the removal or replacement of catheters which was subsequently associated with increased death and neurodevelopmental impairment (NDI) rates<sup>18</sup>. Prompt catheter removal was found to be related with lower mortality rates and improved ND outcomes.

A mutual relationship currently exists when considering patients with *Candida* infections as adults and immunocompromised or immunosuppressed because of AIDS, various pharmacological and radiation therapies respectively. *Candida* species and in particular *C. albicans* is carried by immunocompetent human hosts on the skin and mucous membranes. A breakdown or impairment of the host immune status renders *C. albicans* an opportunistic pathogen for which there is still no vaccine. In most circumstances resolution of a *Candida* infection involves the recovery of the underlying immune defect. In the paediatric care setting, as in the adult setting, hospital-acquired or health-care acquired infections (HAIs) have a significant role in the presence of *Candida* and other bacterial infections. As more infants born with VLBW (<1500g) or ELBW (<1000g) survive, it is essential that not only general infection control practices are upheld but that these practices be specifically targeted

for the NICU. The sophistication of the life support technology (including central venous catheters) as well as the immunological naivety, the permeability of the mucosal barriers, increase the susceptibility of these infants to HAIs. Multi-centre studies have determined the presence of *Candida* infections and the impact these infections have on the mortality and morbidity rates and the neurodevelopmental impairment of ELBW infants from the delayed removal and/or replacement of catheters, prolonged empirical broad-spectrum antimicrobial therapy which promotes *Candida* colonisation. Hopefully data collected from these studies will provide the necessary and useful information to design and implement prospective randomised trials that will result in the lessening of the risk of invasive candidiasis and also improve therapies for infected infants.

Figure 3: Conceptual model of *Candida* disease pathways emphasising the pivotal role of the central catheter and the underestimation of the cumulative incidence of disease.

\*Aspects of neonatal candidiasis captured reasonably well by blood culture. ‡ Aspects of neonatal candidiasis not captured by blood culture<sup>11</sup>.

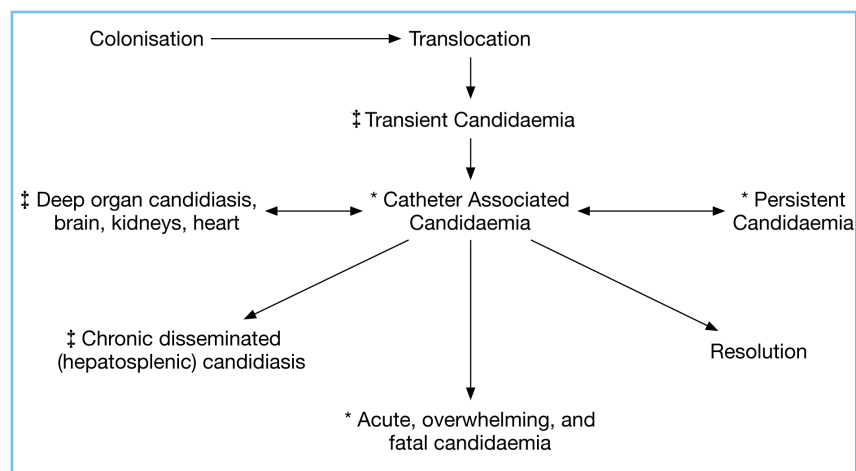
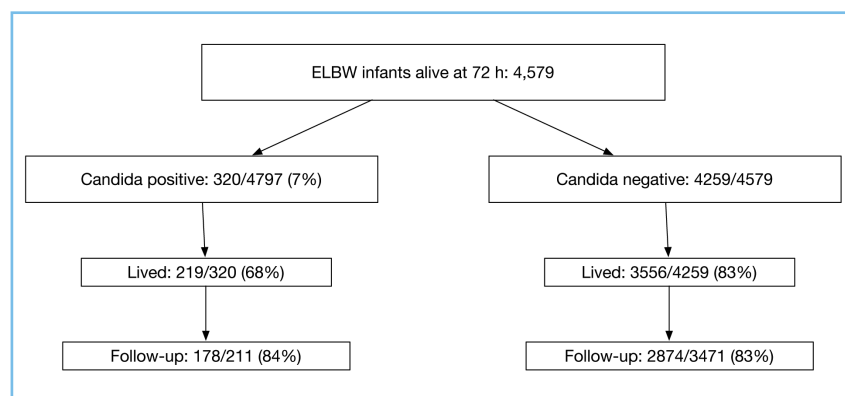


Figure 4: Multi-centre cohort of ELBW infants under study<sup>18</sup>.



## References

- Posfay-Barbe KM, Zerr DM, Pittet D. Infection control in paediatrics. *The Lancet Infectious diseases*. 2008;8(1):19-31.
- Dixon RE. Control of health-care-associated infections, 1961-2011. *MMWR Surveill Summ*. 2011;60(Suppl 4):58-63.
- Borghesi A, Stronati M. Strategies for the prevention of hospital-acquired infections in the neonatal intensive care unit. *Journal of Hospital Infection*. 2008;68(4):293-300.
- Ben Abdeljelil J, Saghruni F, Emira N, Valentin-Gomez E, Chatti N, Boukadida J, et al. Molecular typing of *Candida albicans* isolates from patients and health care workers in a neonatal intensive care unit. *Journal of Applied Microbiology*. 2011;111(5):1235-49.
- Li Z ZR, Hilder L & Sullivan EA Australia's mothers and babies 2011. In: Welfare AloHa, editor. Canberra: AIHW National Perinatal Epidemiology and Statistics Unit.; 2013. p. 1-135.
- Lusky RC, Cifuentes RF, Siddappa AM. A History of Neonatal Medicine—Past Accomplishments, Lessons Learned, and Future Challenges: Part II—The 1990s, the New Millennium, Future Challenges. *The Journal of Pediatric Pharmacology and Therapeutics* : JPPT. 2005;10(3):143-58.
- Brian Smith P, Steinbach WJ, Benjamin Jr DK. Invasive *Candida* infections in the neonate. *Drug Resistance Updates*. 2005;8(3):147-62.
- Baley JE, Ellis FJ. Neonatal candidiasis: ophthalmologic infection. *Seminars in perinatology*. 2003;27(5):401-5.
- Rowen JL. Mucocutaneous candidiasis. *Seminars in perinatology*. 2003;27(5):406-13.
- Chapman RL, Faix RG. Invasive neonatal candidiasis: an overview. *Seminars in perinatology*. 2003;27(5):352-6.
- Benjamin Jr DK, Garges H, Steinbach WJ. *Candida* bloodstream infection in neonates. *Seminars in perinatology*. 2003;27(5):375-83.
- Vonk AG, Netea MG, van der Meer JWM, Kullberg BJ. Host defence against disseminated *Candida albicans* infection and implications for antifungal immunotherapy. *Expert opinion on biological therapy* 2006;6(9):891.
- Netea MG, Brown GD, Kullberg BJ, Gow NAR. An integrated model of the recognition of *Candida albicans* by the innate immune system. *Nat Rev Micro*. 2008;6(1):67-78.
- Bendel CM. Colonization and epithelial adhesion in the pathogenesis of neonatal candidiasis. *Seminars in perinatology*. 2003;27(5):357-64.
- Metrics: Population Attributable Fraction: WHO; [Available from: [http://www.who.int/healthinfo/global\\_burden\\_disease/metrics\\_paf/en/](http://www.who.int/healthinfo/global_burden_disease/metrics_paf/en/)].
- Definitions: emergencies: WHO; [Available from: <http://www.who.int/hac/about/definitions/en/>].
- Roilides E, Farmaki E, Evdoridou J, Dotis J, Hatzioannidis E, Tsivitanidou M, et al. Neonatal candidiasis: analysis of epidemiology, drug susceptibility, and molecular typing of causative isolates. *European Journal of Clinical Microbiology and Infectious Diseases*. 2004;23(10):745-50.
- Benjamin DK, Stoll BJ, Fanaroff AA, McDonald SA, Oh W, Higgins RD, et al. Neonatal Candidiasis Among Extremely Low Birth Weight Infants: Risk Factors, Mortality Rates, and Neurodevelopmental Outcomes at 18 to 22 Months. *Pediatrics*. 2006;117(1):84-92.



# Riga-Fede Syndrome Associated with Neonatal Frenotomy: A Case Report

Dr Owen Gareth Ellis, MBBS, BDS(Hons)

University of Queensland • Email: owen.ellis@gmail.com

## Introduction

The terms natal and neonatal teeth were first described by Massler *et al.*<sup>1</sup> in 1950, and are now widely accepted<sup>2</sup>. Natal teeth refer to the dentition which is present at the time of birth, while neonatal teeth describes those that erupt within the first month of life<sup>1</sup>. The primary dentition usually begins to erupt at 6 months of age, therefore, natal and neonatal teeth represent a departure from the norm<sup>2,3</sup>.

The reported incidence of natal and neonatal teeth differ between authors based on different geographical location, confounding influences and cohort sample size<sup>2,4,5</sup>. However, the general prevalence is likely to be 1:2000 to 1:3500 live births, with natal teeth occurring more frequently<sup>2,3,5,6</sup>.

Natal and neonatal teeth can cause multiple complications as they interfere with breastfeeding and development. The teeth may lacerate the mother's nipples, or cause ulceration to the dorsum of the baby's tongue (Riga-Fede Syndrome)<sup>1,3</sup>. "Teething" may occur with refusal of the neonate to breastfeed, and if the dentition is mobile the risk of aspiration exists<sup>1,3</sup>. Complications of the teeth themselves include: an increased risk of caries, pulp polyps, and premature eruption of the successor<sup>5</sup>.

Riga-Fede syndrome, while benign, is an important complication of natal and neonatal teeth due to its consequences on the child's development<sup>7</sup>. Riga-Fede Syndrome occurs most commonly as a single ulcerative lesion on the dorsum of the tongue due to repeated mechanical trauma of the tongue as it passes over a prematurely

erupted mandibular central incisor<sup>8</sup>. This self-limiting reactive ulcer normally occurs in the first year of life and is often asymptomatic<sup>8</sup>. However, when painful it can result in poor feeding and a failure to thrive<sup>7</sup>. In these circumstances the presence of natal and neonatal teeth must properly be addressed to ensure the best outcomes for the child<sup>7</sup>.

## Case Presentation

A 7-week old Caucasian girl was referred into the Paediatric Dental Clinic at the University of Queensland's School of Dentistry for the management of her natal and neonatal teeth. The parents expressed concerns that the teeth may be causing repeated mechanical trauma to the dorsum of the infant's tongue, resulting in a chronic ulcer.

The pregnancy was unremarkable with the mother attending antenatal clinics appropriately, neither smoking nor drinking, and was taking folate supplements. However, this was the mother's first child with an age of 35 years.

The baby was delivered at 38 weeks, via an emergency caesarian section, following a failure to progress with a vaginal delivery. At delivery the APGAR scores were 3/10, and 5/10 at 5-minutes. The child was admitted to the neonatal intensive care unit for 2 days and managed conservatively. Blood cultures and a full blood count were unremarkable, and the child was given vitamin-K as per protocol. The infant was not known to have any other medical problems, had no allergies, and had not been prescribed any regular medications.

The parents noticed that their child was born with a single erupted tooth, the lower left primary central incisor, and another erupted a few days after birth, the lower right primary central incisor (*Figure 1*). The parents were advised that the child had an unusually short lingual frenulum. The mother stated that there were issues with breast-feeding that may have been caused by the tongue-tie. There was no documentation when the family presented to the School of Dentistry, however, it was reported that a medical professional performed a frenotomy when the child was 7 days old. Since that procedure a non-healing ulcer had remained on the ventral surface of the tongue at the surgical incision site. There was a concern raised by health professionals and the family that the neonatal teeth may have been causing ongoing trauma, resulting in the 6-week old ulcer.

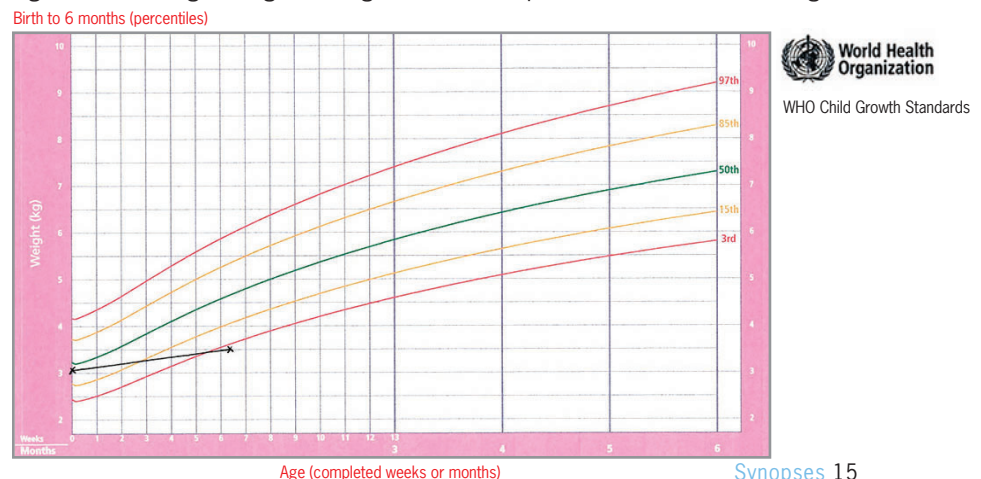
Importantly in this case the child had suffered from a failure to thrive, losing two centile growth lines since birth. *Figure 2* depicts a weight-for-age diagram for girls aged 0 to 6-months with this child's growth plotted, which has been adapted from the World Health Organisation (WHO). It should be noted that preterm birth cannot be adjusted for on WHO weight-for-age diagrams. The child was 3.086kg at birth, close to the 50th centile, and at 6 weeks and 3 days weighed 3.500kg, which is just under the 3rd centile.

Extra-oral examination revealed neither cervical lymphadenopathy, nor skin lesions. There were no obvious growth malformations, however, it was noted that

Figure 1: Natal and neonatal teeth



Figure 2: Girl's weight-for-age centile growth chart (adapted from the World Health Organisation)



the child likely had hypertelorism. Intra-oral examination revealed two partially erupted teeth: the 71 & 81. The teeth were sound and non-mobile. Furthermore, a 1.5cm x 1.5cm ulcerated lesion was noted on the midline ventral surface of the tongue. During tongue movements this ulcerated surface was in contact with the partially erupted deciduous central lower incisors. The remaining oral mucosa and oral anatomy was unremarkable. A diagnosis of Riga-Fede Syndrome was made.

Given the chronic nature of the ulcer, it was decided that treatment was indicated to facilitate mucosal healing. No radiographs were taken of the dentition due to the child's young age. The least invasive option of odontoplasty was selected. With the baby supported by the mother and father, a high-speed round-bur without water was used to gently smooth the incisal surfaces of the natal and neonatal teeth.

The infant returned two weeks later for review, now aged 9 weeks old, with little change to the ulcer. Odontoplasty was once again performed, and the ulcer has slowly resolved over a month.

## Discussion

This case is unusual in that the child presented with both a natal tooth, and a neonatal tooth in association with ankyloglossia (tongue-tie). To the best of the author's knowledge this is the first documented case of Riga-Fede syndrome following frenotomy for ankyloglossia.

Various treatment options for Riga-Fede Syndrome have been proposed by different authors including: extraction; reducing the incisal edges; placing composite resin over the edges; and no treatment<sup>7,9</sup>. Riga-Fede syndrome does not necessitate extraction in itself, unless the tooth is mobile<sup>3</sup>. There is no evidence for any specific regimen, and management is decided on an individual basis by the treating clinician<sup>7,9</sup>. In this patient's case a conservative approach was adopted given the low level of tooth eruption, and lack of mobility. Given the limited compliance with this infant, obtaining adequate moisture control to place composite resin would have been very difficult. Smoothing off the sharp incisal edges was performed, as it was the quickest and most conservative treatment option.

In this case a dental radiogram was not performed because the natal and neonatal teeth strongly resembled the primary dentition. X-rays can be a helpful in distinguishing supernumerary teeth,

which should be extracted<sup>2</sup>. Over 90% of natal and neonatal teeth are actually prematurely erupted deciduous teeth, with supernumerary teeth only comprising a small percentage<sup>3,5</sup>. The mandibular central incisors are the most commonly involved teeth, representing 85% of cases<sup>3</sup>, which is consistent with this patient.

Frenotomy, or the division of a tongue-tie, is considered in some new-born babies with breast feeding problems<sup>10</sup>. This procedure has existed in different forms for centuries with popularity depending on the vogue of the day<sup>11,12</sup>. While relatively benign, frenotomy can result in damage to the submandibular duct orifice, infection, and life-threatening hypovolaemic shock<sup>13</sup>.

Currently there is insufficient evidence to either support or refute the practice of frenotomy<sup>11,14</sup>. The review by Suter *et al.*<sup>11</sup> identified 63 published articles on the subject with little comparable or solid evidence. There is conflicting evidence demonstrating that frenotomy improves latching, and at best the evidence suggests it may reduce subjective nipple pain<sup>14</sup>. There has been no trial comparing infant weight-gains<sup>14</sup>. Given the level of evidence, frenotomy may be considered on an individual basis where the clinician feels that the tongue-tie is significantly impacting on the neonate's ability to breast-feed<sup>10,14</sup>. The specific rationale for frenotomy is unknown in the patient described in this report.

The most significant medical issue faced by this child is her failure to thrive, only gaining 414g in 6weeks and 3 days. Multiple differential diagnoses exist including: a poor suckling reflex with inadequate food intake; a potential malabsorption disorder; and a possible congenital malformation. However, Riga-Fede Syndrome with ongoing discomfort during breast-feeding is the most likely cause. It is hoped that treatment of her natal and neonatal teeth will lead to an improvement in weight gain.

## Conclusion

Frenotomy remains a common practice in both the medical and dental professions as an aid to suboptimal infant feeding, despite conflicting evidence in the literature. There are several potential adverse outcomes of such a procedure. This case illustrates one potential issue, being a non-healing ulcer exacerbated by neonatal and natal teeth.

The patient described suffered a failure to thrive as a consequence of treatment, highlighting the need for a thorough examination prior to undertaking any procedure on an infant, and an understanding of all potential consequences.

## Conflict of Interest:

None declared

## References

1. Massler M, Savara BS. Natal and neonatal teeth; a review of 24 cases reported in the literature. *The Journal of pediatrics*. 1950 Mar;36(3):349-59. PubMed PMID: 15405415.
2. Cunha RF, Boer FA, Torriani DD, Frossard WT. Natal and neonatal teeth: review of the literature. *Pediatric dentistry*. 2001 Mar-Apr;23(2):158-62. PubMed PMID: 11340731.
3. Leung AK, Robson WL. Natal teeth: a review. *Journal of the National Medical Association*. 2006 Feb;98(2):226-8. PubMed PMID: 16708508. Pubmed Central PMCID: 2595049.
4. Basavanthappa NN, Kagathur U, Basavanthappa RN, Suryaprakash ST. Natal and neonatal teeth: a retrospective study of 15 cases. *European journal of dentistry*. 2011 Apr;5(2):168-72. PubMed PMID: 21494384. Pubmed Central PMCID: 3075983.
5. Mhaske S, Yuwanati MB, Mhaske A, Ragavendra R, Kamath K, Saawarn S. Natal and neonatal teeth: an overview of the literature. *ISRN pediatrics*. 2013;2013:956269. PubMed PMID: 24024038. Pubmed Central PMCID: 3759256.
6. Ar P, Gr R, Os R, A JK, Ab S. Neonatal tooth in fraternal twins: a case report. *International journal of clinical pediatric dentistry*. 2009 May;2(2):40-4. PubMed PMID: 25206110. Pubmed Central PMCID: 4086560.
7. Slayton RL. Treatment alternatives for sublingual traumatic ulceration (Riga-Fede disease). *Pediatric dentistry*. 2000 Sep-Oct;22(5):413-4. PubMed PMID: 11048312.
8. Costacurta M, Maturo P, Docimo R. Riga-Fede disease and neonatal teeth. *ORAL & implantology*. 2012 Jan;5(1):26-30. PubMed PMID: 23285403. Pubmed Central PMCID: 3533976.
9. Buchanan S, Jenkins CR. Riga-Fedes syndrome: natal or neonatal teeth associated with tongue ulceration. Case report. *Australian dental journal*. 1997 Aug;42(4):225-7. PubMed PMID: 9316308.
10. Todd DA. Tongue-tie in the newborn: what, when, who and how? Exploring tongue-tie division. Breastfeeding review : professional publication of the Nursing Mothers' Association of Australia. 2014 Jul;22(2):7-10. PubMed PMID: 25109095.
11. Suter VG, Bornstein MM. Ankyloglossia: facts and myths in diagnosis and treatment. *Journal of periodontology*. 2009 Aug;80(8):1204-19. PubMed PMID: 19656020.
12. Hogan M, Westcott C, Griffiths M. Randomized, controlled trial of division of tongue-tie in infants with feeding problems. *Journal of paediatrics and child health*. 2005 May-Jun;41(5-6):246-50. PubMed PMID: 15953322.
13. Opara PI, Gabriel-Job N, Opara KO. Neonates presenting with severe complications of frenotomy: a case series. *Journal of medical case reports*. 2012;6:77. PubMed PMID: 22394653. Pubmed Central PMCID: 3310719.
14. Cawse-Lucas J, Waterman S, St Anna L. Clinical inquiry: does frenotomy help infants with tongue-tie overcome breastfeeding difficulties? *The Journal of family practice*. 2015 Feb;64(2):126-7. PubMed PMID: 25671532.



# Vietnam Vision Project Australia – Dental Mission

Vietnam Vision Project Australia (VPPA), a charity organization, helping the disadvantaged, poor patients in Vietnam.

Since 2003, VPPA has been in operation to provide free cataract operations for the poor in rural and remote areas of Central and South Vietnam by using the skills and technology from Australia, with the help of Australian Ophthalmologists, Optometrists, General Practitioners, Dentists, Pharmacists and other Health Professional volunteers. 2008 marked the beginning of VPPA partnership with Rotary Club of Liverpool West and the Rotary Australia World Community Services Inc (RAWCS).

From 2011, Dental practitioners joined VPPA providing palliative dental care (relief of pain and control dental infection) for poor people especially children with disabilities and the orphans in Rural Vietnam and Cambodia, which have very limited Dental cares

In 2012, VPPA celebrated its 10th year milestones with the achievement of 5000 cataract patients. Moreover, there were over 2000 dental patients being treated in the two years mission. Most children were from the orphanages and the remote community centres housing disabled and abandon children. Most of these children have never had any access to Dental care, ever.

It was the humble beginning in 2011, when there were merely 4 Dentists from Australia participated. This rapidly grew to 8 Dentists strong team in 2012, then 12 Dentists in 2013, and 15 Dentists in 2014. VPPA Dental team was joined force with a large contingent of 15 Dentists from the Saigon Dental Team (SDT), which provided significant additional manpower and invaluable backbone dental equipment and instruments. Furthermore, the VPPA Dental team it was assisted by highly motivated and efficient Dental nurses, Administration and Sterilisation staff. The team was further enhanced by the enthusiastic, well organised supporting team of volunteers from both Australia and Local, providing ground logistics and crowd control. It was the ultimate personal sacrifice, perseverance and dedication of those involved to help make the mission possible.

The working condition was most challenging for any Dental procedures to be executed. The humidity was high and the crowded environment was not well ventilated. Even though the

available field Dental equipment was at times unreliable, they were adequately utilised. Digital radiography was available for diagnostic findings. Despite of the harsh and primitive working conditions, every attempt was made to provide the best possible standard of care, quality control and sterilisation protocol. Every instrument was thoroughly autoclaved after each and every patient. The logistic coordination of local volunteers with patient transportation, admission and crowd control was well managed. The tremendous team work, especially the highly motivated young and enthusiastic SDT contributed significantly to the flow of patients. Medically compromised patients and those with disabilities and behavioural problems were treated by Paediatric Dentists from VPPA Dental team. Oral Sedation was carried out with appropriate monitoring equipment. The main objective of the Dental mission was palliative relief of pain and infection. The majority of treatment performed was restorations and extractions. Dental education/awareness and oral health care instructions were delivered by means of Audiovisual presentations (Dr Rabbit video) and live demonstrations. Pamphlets and oral care products were issued to every treated patient, thanks to the generous sponsorship of Colgate Asia

This year, 13-27 August, our mission covers Phnom Penh, Cambodia and Da-Nang, Vietnam. Apart from providing palliative dental care, VPPA Dental team will be participating with continuing education such as didactic teaching and clinical training the local Dentists and Dental students. It is hoped that the knowledge will be passed on for long lasting benefits.

It was a real privilege for everyone in the Dental Team to be involved in this tremendous contribution for good cause. It was hoped that our efforts would help make some difference to the quality of life of the suffering children. It was only humble beginning and there are still lots more to be accomplished of this humanitarian journey. VPPA looks out for more contribution from Health Profession to help make this worthwhile journey a reality. VPPA mission is only possible with the financial support of sponsors and its volunteers who dedicate their time and effort. Dental mission in particular,

requires extensive involvement of Dental equipment, instruments and materials. We have been very fortunate having tremendous generosity and support from our sponsors and donors. It is our deepest gratitude for their continuing supports. In Giving We Unite.

Prepared by Dr Chinh Nguyen

**Dental Team Leader of Vietnam Vision Project Australia**

**Vietnam Vision Projects Australia**

**PO Box 313,**

**Cabramatta NSW 2166, Australia**

**T: +61(0)2-97241164**

**F: +61(0)2-97557342**

**[www.vietnamvision.org.au](http://www.vietnamvision.org.au)**

## Hailey Grant, Dental Assistant

This experience changed my life. More importantly, it changed the way I look at my life.

My name is Hailey and this was my first time travelling to Vietnam to volunteer.

Some things stand out more than others, the faces of the beautiful children are mostly a blur. The volume of people that came through those hospital doors still astounds me. The smiles on the faces of the hardworking team around me is something I will never forget. I managed to look up a few times and see the VPP team working harder than I have ever seen human beings work, and catch the eyes of another volunteer and share an exhausted smile. The sense of kinship I felt with every single volunteer on the trip is something that still warms my heart. It truly is like a family. I think that without this bond it would not have been as easy to stand there and help people who live on 15 cents a day. You need passionate people around you so you can be there for the orphans who have literally not got anyone in their lives to rely on.

We managed to raise over \$2000AUD on the spot for some blind people that came through, as well as fix what we could of their teeth. We also had the privilege of meeting a gorgeous 3 year old girl who was very happy to have some dental work done, and the Eye Team upstairs also helped her with her eyesight. When we were finished she was jumping up and down giving everyone high fives! I'm so glad I had the opportunity to be there



and witness these things. It was such a different situation to work in compared to Australia, but we all got over that pretty quickly and did what we needed to do.

I experienced so many different emotions during this time, but for me, nothing compares to the last day. After packing up all our dental supplies and organising them ready for next year, a bus drove us to a temple so we could donate food packages to poor families in that province. These people, young and old, were so thankful, even with the language barrier it was easy to see that they were so grateful for us helping them. It was truly heart warming to see.

The whole trip has opened my eyes to a less fortunate way of life, and made me more aware of how I want to give back to the world.

I am so thankful that I am in a position to help people less fortunate than myself.

Until next year!

### Dr Anita Moric, Dentist

You always hear about how wonderful it is to volunteer, but until you actually take part, you never realize how it truly affects you. I first heard about the Vietnam Vision Projects Australia (VVPA) earlier this year from a colleague of mine, who had been

involved with this group for the past three years. She never got the chance to finish asking me whether I was interested before I interrupted her with a very enthusiastic “Yes I would love to do this!”

The first few days in Saigon we got acquainted with the VVPA group. This was my first time in Vietnam, so as excited as I was, I was also a little nervous. Everyone was so friendly and welcoming, showing us the sights and sounds of this amazing city. It was a great way to settle in before the real work began.

I have to admit, when I first saw the empty rooms in the ground floor of the local hospital, I found it hard to picture how this was all going to work. But in a matter of hours the VVP team managed to set up about 10 chairs all with their own working portable dental units, a sterilizing room, and triage/waiting area. Also hundreds of dental packs were made up which were given out to the children after their dental treatment. The next few days were a blur of children's faces – smiles, sometimes tears, filling teeth, pulling teeth. Did we really see nearly 600 children? I stopped worrying that I hadn't treated children for a while back home; I stopped stressing how differently things were done; I think I even forgot about the heat – that's how hard we worked! We

also managed to raise over \$2000 AUD for some blind people that came through the clinic – such spontaneous generosity from our volunteers. On the last day, after we cleaned and packed up all the dental supplies, we drove down to a local temple and helped give out food packages to the villagers. This was a very emotional experience for me, and I will never forget how thankful the villagers were, one lovely lady in particular gave me a big hug after I burst into tears. Sometimes the language barrier doesn't matter.

I am truly thankful to everyone involved in VVP for looking after us so well, especially the local volunteers and dental students, whose assistance was invaluable. I'd like to think I made a little bit of difference, but honestly this experience made a huge difference to me. Once again, thank you, and hope to see you next year.

### Dr Thao Truong, Dentist

It is a difficult task to condense such a life-changing and immensely rewarding experience into a few paragraphs but it is something I feel needs to be shared. I boarded a plane to Saigon, a place I had not visited for almost 12 years. Several months earlier, my colleague had mentioned the Vietnam Vision Project in passing conversation and I





was immediately interested. Having only recently graduated from university, I was energetic and keen to apply my skills for a good cause. I had reservations at first as I was entering a very close-knit and organised group; I was worried that I would mess up, that I would be lonely and that I would not live up to expectations. But my doubts immediately subsided the moment I arrived in Vietnam; I was welcomed with open arms and was quickly acquainted with other members of the team. There were seasoned members who had been with the project since its humble beginning 13 years ago and there were new members such as myself, keen to get involved. It was refreshing to see so many dedicated people from different backgrounds taking time from their busy schedules to come together for a good cause.

The first couple of days were 'the calm before the storm'. It involved some local sight-seeing and allowed time for team members to bond and prepare for the mission ahead. Early Monday morning we all poured into 2 buses that were taking us to our mission destination. I had butterflies in my stomach.

The first task on arrival to the hospital was setting up the surgeries. Indeed, this crucial

aspect of the mission is often overlooked but required the collective effort of all members and superior organisation skills within a very short time frame. I watched in amazement as empty rooms slowly transformed into functioning surgical rooms. We were fortunate enough to have the Saigon team join us; without their support, the mission would definitely not have been as successful as it was.

The following days were hectic. The number of patients we saw over the 3 day period was immense. The team worked tirelessly with empathy and determination to drive us through those long days. The triage team had the nearly impossible task of prioritising patient treatments, especially in a young child with a mouth full of decay; where do we start? My heart sunk with every child that walked in with severe dental decay and multiple dental infections. The trend of poor oral hygiene was rampant. Most of the patients we saw had never seen a dentist nor have they been taught how to properly maintain their oral health.

With the short time we had for each appointment and the extent of dental disease, I wondered whether we would be making any difference for these patients. However, one child, in particular, made me

realise my role and helped me appreciate why I was there. Her name was Mai, 13 years of age, bright eyes and well behaved, she loved to smile but most of her teeth were decayed. She was nervous to meet me but listened tentatively to everything I said. I restored several anterior teeth but I felt it wasn't enough. Despite this, she was overcome with happiness when she saw that her front teeth were white and no longer black/brown. I showed her how to brush and advised her to reduce her sweet intake. She thanked me profusely and said that she wanted to be a dentist to 'help other people' smile like I did for her. I was overcome with emotion; she had pinpointed exactly why I had become a dentist to begin with and why I joined the Vietnam Vision Project.

I am humbled and overwhelmed by the dedication and hard work of all the team members and appreciate the enormous effort that came with organising such a mission. Everyone worked tirelessly and put 110% into the task at hand. I would like to thank the entire team for making the trip such an incredible experience. I met some amazing, beautiful people along the way and have memories to last a lifetime. The trip was an undeniable success and I look forward to many more.

# Up Coming *Events*

4 August 2016

ANZSPD(VIC)

Bridging the Cleft

Woodward House, The University of Melbourne, Melbourne  
amylfung@yahoo.com

5 August 2016

ANZSPD (WA)

The other side of the mirror:  
Reflecting on diverse paediatric issues

The University Club UWA, Perth  
<http://bit.ly/28JmP5k>

11-13 August 2016

19th World Congress on Dental Traumatology

Brisbane Convention and Exhibition Centre  
Brisbane, Australia  
[www.wcdt2016.com](http://www.wcdt2016.com)

26-29 October 2016

NZDA Conference 2016

TSB Arena  
Wellington, New Zealand  
[www.nzda2016.org.nz](http://www.nzda2016.org.nz)

8-11 February 2017

13th International Congress of Cleft Lip and Palate and Related Craniofacial Anomalies

Radisson Blu Resort  
Chennai, Tamil Nadu, India

26-27 March 2017

RK Hall Lecture Series 2017

Auckland, New Zealand  
<http://bit.ly/28KASeo>

17-21 May 2017

ADA 37th Australian Dental Congress

Melbourne, Australia  
[www.facebook.com/adacongress](http://www.facebook.com/adacongress)  
[cleft2017.org](http://cleft2017.org)

4-7 October 2017

IAPD 26th Congress

Santiago, Chile  
[www.iapd2017.com](http://www.iapd2017.com)

## Australia and New Zealand Society of Paediatric Dentistry [www.anzspd.org.au](http://www.anzspd.org.au)

### Federal President

Dr Tim Johnston  
[federal.president@anzspd.org.au](mailto:federal.president@anzspd.org.au)

### Vice President

Dr Sue Taji  
[federal.vicepresident@anzspd.org.au](mailto:federal.vicepresident@anzspd.org.au)

### Secretary

Dr Carmel Lloyd  
[federal.secretary@anzspd.org.au](mailto:federal.secretary@anzspd.org.au)

### Treasurer

Dr Rod Jennings  
[federal.treasurer@anzspd.org.au](mailto:federal.treasurer@anzspd.org.au)

### Immediate Past President

Dr John Sheahan  
[johnsheahan@bigpond.com](mailto:johnsheahan@bigpond.com)

### Branch Executives

Branch	President	Secretary	Fed Councillor
NZ	Dr Alison Meldrum <a href="mailto:alison.meldrum@dent.otago.ac.nz">alison.meldrum@dent.otago.ac.nz</a>	Dr Craig Waterhouse <a href="mailto:craig.shona@extra.co.nz">craig.shona@extra.co.nz</a>	Dr Heather Anderson <a href="mailto:craig.shona@extra.co.nz">craig.shona@extra.co.nz</a>
NSW	Dr Michelle Tjeuw <a href="mailto:drmicheletjeuw@gmail.com">drmicheletjeuw@gmail.com</a>	Dr Prashanth Dhanpal <a href="mailto:anzspd.nsw@gmail.com">anzspd.nsw@gmail.com</a>	Dr Soni Stephen <a href="mailto:sonistephen71@gmail.com">sonistephen71@gmail.com</a>
QLD	Dr Steven Kazoullis <a href="mailto:steven@kazoullis.com">steven@kazoullis.com</a>	Dr Gregory Ooi <a href="mailto:g.ooi@uq.edu.au">g.ooi@uq.edu.au</a>	Dr Sue Taji <a href="mailto:drsuetaji@qdg4kids.com.au">drsuetaji@qdg4kids.com.au</a>
SA	Dr Gwendolyn Huang <a href="mailto:gwendolyn.huang@gmail.com">gwendolyn.huang@gmail.com</a>	Dr Wendy Cheung <a href="mailto:sa.secretary@anzspd.org.au">sa.secretary@anzspd.org.au</a>	Dr Michael Malandris <a href="mailto:manjmichael@gmail.com">manjmichael@gmail.com</a>
VIC	Dr Evelyn Yeung <a href="mailto:dr.evelyn.yeung@gmail.com">dr.evelyn.yeung@gmail.com</a>	Dr Amy Fung <a href="mailto:amylfung@yahoo.com">amylfung@yahoo.com</a>	Dr David Manton <a href="mailto:djmanton@primus.com.au">djmanton@primus.com.au</a>
WA	Dr Vanessa William <a href="mailto:wa.president@anzspd.org.au">wa.president@anzspd.org.au</a>	Dr Rod Jennings <a href="mailto:anzspdwa@gmail.com">anzspdwa@gmail.com</a>	Dr Tim Johnston <a href="mailto:federal.president@anzspd.org.au">federal.president@anzspd.org.au</a>

### Editor Synopses

Steven Kazoullis  
[steven@kazoullis.com](mailto:steven@kazoullis.com)

### Correspondence

Steven Kazoullis  
PO Box 7, RBWH Post Office  
Herston QLD 4209

### Artwork, printing and distribution



Colgate Oral Care  
Level 15, 345 George Street  
Sydney NSW 2000 AUSTRALIA

### Mailing List

The mailing list for the distribution of Synopses is maintained by Dr John Winters on behalf of the Federal Secretary/Manager of ANZSPD. It is compiled from information supplied by the Branch Secretaries. If there are errors in your mailing details, please contact Dr John Winters or your Branch Secretary. Please do not contact Colgate for address correction.

### Submissions

All text for inclusion in Synopses must be submitted to the editor on CD or by email. Media will not be returned. Address email to [steven@kazoullis.com](mailto:steven@kazoullis.com). Please enclose your contact details and email address with all submissions.